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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 24

Application Number: 09/675,860
Filing Date: September 29, 2000
Appellant(s): BARRERA ET AL.

Kelly Reynolds
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 12, 2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

Paper No. 20 filed on August 8, 2003 titled "Amendment After Final Rejection" was not entered. It was treated as a "request for reconsideration" since it presented arguments but contained no proposed claim amendments.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because claims 2 and 12 in the third grouping depend on claim 1 which is within the first grouping while claim 14 in the third grouping depends on claim 13 which is in the second grouping. A board decision which affirms the first and

third groupings based on claims 1 and 2, respectively, while reversing the second grouping based on claim 13 would be in conflict. Additionally, claim 29 in the first grouping depends on claim 28 which is in the fourth grouping. A board decision which affirms the first grouping based on claim 1 while reversing the fourth grouping based on claim 28 would be in conflict. Finally, claim 30 in the second grouping depends on claim 28 which is in the fourth grouping. A board decision which affirms the second grouping based on claim 13 while reversing the fourth grouping based on claim 28 would be in conflict.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,397,422	Gwyn	8-1983

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

Claims 1, 3-5, 7-10, 13, 15-17, 19-21, 26-30 stand rejected under 35 U.S.C. 102(b) as being anticipatated by Gwyn (4,397,422).

Gwyn discloses an apparatus comprising: an inlet 17; a throat region 19; a first aperture 20 (aperture 20 for the white colorant); a second aperture 20 (aperture 20 for the green colorant); a third aperture 20 (for the red colorant); an exit nozzle 15.

In claim 13, the exit nozzle is considered to be the portion of throat region 19 downstream of aperture 20.

Claims 1,13 and 28 recite "adapted to" which merely requires the ability to so perform.

Claims 1, 13 and 28 recite "configured to" which merely requires the ability to so perform.

Claims 1, 13 and 28 recite "for..." which merely recites the manner is which a claimed apparatus is intended to be employed and does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Claim 5 further defines the first and second chemical vapor deposition dopants comprising TEOS. In claim 1, the first and second chemical vapor deposition dopants are not positively recited. The dopants are merely recited as intended use of the first and second aperture of the throat region of the apparatus being claimed.

Claim Rejections - 35 USC § 103

Claims 2, 12, 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Gwyn (4,397,422).

With respect to claims 2 and 14, Gwyn discloses the limitations of the claimed invention with the exception of the angle being forty to sixty degrees. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided an angle of forty to sixty degrees for optimization dependent of application criteria, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to claim 12, Gwyn discloses the limitations of the claimed invention with the exception of the angle being twenty to forty degrees. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided an angle of twenty to forty degrees for optimization dependent of application criteria, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

(11) Response to Argument

Claims 1, 3-5, 7-10, 26 and 29

Appellant argues that Gwyn does not anticipate,

> The apparatus includes a chemical vapor deposition chamber having a cavity that includes an inlet nozzle, a throat region and an exit nozzle.

Appeal Brief, page 7, lines 7-9. Gwyn discloses a chemical vapor deposition chamber 18 having a cavity 15, 17, 19 that includes an inlet nozzle 17, a throat region 19 and an exit nozzle 15. See Gwyn, figure 1 and column 2, lines 18-49 showing a chamber 17 having a down stream converging nozzle section which leads into a venturi throat section 19 and a diverging duct 15.

Appellant argues that Gwyn does not anticipate,

> In more detail, the inlet nozzle has a first diameter, pressure and temperature, and is adapted to receive a carrier fluid. The throat region has a second diameter and pressure, both less than the first diameter and pressure, and is connected to the inlet nozzle at a first end. The throat region also has a first and a second aperture for atomization and mixing therein by the carrier fluid.

Appeal Brief, page 7, lines 10-15. Gwyn discloses the inlet nozzle 17 (particularly the downstream converging nozzle) has a first diameter (the upstream side of the converging section), pressure and temperature (inherent in that the device and the fluid flow must have a pressure and temperature), and is adapted to receive a carrier fluid (compressed air). The throat region 19 has a second diameter and pressure, both less than the first diameter (section 19 is the same diameter as the outlet of the converging section 17 which is less than the inlet of the converging section 17) and pressure (the pressure in throat region 19 by definition is less than in the converging section 17 since air is accelerated through the converging section; also see, Gwyn, column 2, lines 24-30), and is connected to the inlet nozzle at a first end (the down stream end of converging section 17). The throat region also has a first and a second aperture (Gwyn discloses three apertures 20) for atomization and mixing therein by the carrier fluid (compressed air)

Appellant argues that Gwyn does not anticipate,

> The exit nozzle is connected to the throat region at a second end, and has an exit pressure lower than the second pressure and a third temperature. The exit nozzle has a third diameter greater than the second diameter and is configured to introduce the mixed atomized first and second chemical vapor deposition dopants and carrier fluid into the chemical vapor deposition chamber.

Appeal Brief, page 7, lines 16-20. Gwyn discloses the exit nozzle 15 connected to the throat region 19 at a second end (the end where exit nozzle 15 and throat region 19 meet), and has an exit pressure lower than the second pressure (the pressure in the diverging exit nozzle 15 is less than the pressure in the throat region 19 because the

fluid expands in the diverging exit nozzle, and therefore, the pressure must decrease as defined by the laws of fluid dynamics). Note that appellant's claims describe the inlet nozzle, the throat region, and the exit nozzle having pressures and temperatures. It is not the physical device which possesses such temperature and pressure characteristics. For if no flow were present, the temperature and pressure within the device would be constant. It is the fluid flow itself which possesses such temperature and pressure characteristics. Gwyn further discloses the exit nozzle having a third diameter (the down stream end of the diverging section of exit nozzle 15) greater than the second diameter (the diameter of the throat region 19) and is configured to introduce the mixed atomized first and second chemical vapor deposition dopants (white and green colorants) and carrier fluid (compressed air) into the chemical vapor deposition chamber 18. Regarding the recitation directed to "a first and a second chemical vapor deposition dopant," claim 1 merely recites the intended use of the device for the dopants. Additionally, the paint colorants meet the definition of "chemical vapor deposition dopants." Paint colorant is inherently "chemical." The colorant is vaporized in the compressed air stream. "Deposition" requires that the colorant is deposited. The colorants are eventually deposited onto their target. "Dopant" is defined as:

> A substance, such as boron, added in small amounts to a pure semiconductor material to alter its conductive properties for use in transistors and diodes.

The American Heritage® Dictionary of the English Language, Third Edition copyright © 1992 by Houghton Mifflin Company. A colorant is a "substance" and has the inherent

characteristic to alter the conductive properties in a pure semiconductor. Finally, the exit nozzle 15 is configured to introduce the mixed dopants into the chemical vapor deposition chamber 18. Appellant claim construction requires that the exit nozzle 15 be configured to introduce the mixed dopants into itself since the chemical vapor deposition chamber 18 has been defined to include the exit nozzle 15. See Appeal Brief, page 16, claim 1, lines 3-4. Such a limitation is inherently met.

Appellant argues that Gwyn is non-analogous art. Appeal Brief, page 8, line 3 through page 9, line 8. Non-analogous art argument is not proper for a rejection under 35 USC 102.

Appellant argues that "dopant" should be given the broadest reasonable interpretation consistent with the specification. Appeal Brief, page 9, lines 12 through page 10, line 3. The claims have been interpreted in light of the specification but it is not proper to read the specification as a limitation into the claim. The term "dopant" has been given the broadest reasonable definition as defined in the dictionary. Additionally, "dopant" is merely recited as intended use for the claimed device.

Appellant argues the interpretation of "chamber" in the recitation of "a chemical vapor deposition chamber." Appeal Brief, page 10, line 4 through page 11, line 3. Referring to appellant's Appeal Brief, page 16, claim 1, claim construction dictates that "a chamber" recited in line 2 is a separate element of "a chemical vapor deposition chamber" recited in line 3. The "chamber" recited in line 2 is the intended use of the "apparatus" recited in line 1 "for delivering a plurality of chemical vapor deposition fluids." Lines 2-3 recites, the "apparatus..., comprising: a chemical vapor deposition

chamber." Lines 3-4 further defines the "chemical vapor deposition chamber having a cavity comprising an inlet nozzle, a throat region and an exit nozzle..." Therefore, the "inlet nozzle," the "throat region" and the "exit nozzle" make up the "cavity." The "cavity" in turn makes up the "chemical vapor deposition chamber." The "chemical vapor deposition chamber" in turn makes up the "apparatus" which in turn is intended to deliver a plurality of chemical vapor deposition fluids to a chamber. It is recognized that the transitional phrase "comprising" allows additional elements but the recited elements must be included in the apparatus. No other reasonable interpretation claim would provide a meaningful understanding of the claimed invention.

Claims 13, 15-17, 19-21 and 30

Appellant argues that Gwyn does not anticipate,

> This apparatus also includes a chemical vapor deposition chamber having a cavity that includes an inlet nozzle, a throat region and an exit nozzle.

Appeal Brief, page 11, lines 9-11. Gwyn discloses a chemical vapor deposition chamber 18 having a cavity 15, 17, 19 that includes an inlet nozzle 17, a throat region 19 and an exit nozzle 15. See Gwyn, figure 1 and column 2, lines 18-49 showing a chamber 17 having a down stream converging nozzle section which leads into a venturi throat section 19 and a diverging duct 15.

Appellant argues that Gwyn does not anticipate,

> In more detail, the inlet nozzle has a first diameter, pressure and temperature, and is adapted to receive a carrier fluid such as O_2, N_2 or He. The throat region has a second diameter and pressure, both less than the first diameter and pressure, and is connected to the inlet nozzle at a first end. The throat region also has a first and a second aperture for

> injecting first and second chemical vapor deposition fluids, such as precursors or dopants, into the throat region for atomization and mixing therein by the carrier fluid.

Appeal Brief, page 11, lines 12-18. Gwyn discloses the inlet nozzle 17 (particularly the downstream converging nozzle) has a first diameter (the upstream side of the converging section), pressure and temperature (inherent in that the device and the fluid flow must have a pressure and temperature), and is adapted to receive a carrier fluid (compressed air) such as O_2, N_2 or He (all inherently in air, He in trace amounts, at least). The throat region 19 has a second diameter and pressure, both less than the first diameter (section 19 is the same diameter as the outlet of the converging section 17 which is less than the inlet of the converging section 17) and pressure (the pressure in throat region 19 by definition is less than in the converging section 17 since air is accelerated through the converging section; also see, Gwyn, column 2, lines 24-30), and is connected to the inlet nozzle at a first end (the down stream end of converging section 17). The throat region also has a first and a second aperture (Gwyn discloses three apertures 20) for injecting first and second chemical vapor deposition fluids, such as precursors or dopants (white and green colorants), into the throat region 19 for atomization and mixing therein by the carrier fluid (compressed air). "Precursors" is a broader recitation than "dopants." Colorant is inherently a precursor for itself, i.e. paints are applied in multi-layers.

Appellant argues that Gwyn does not anticipate,

> The exit nozzle is connected to the throat region at a second end. As is currently recited, the exit nozzle has the same diameter, as the throat region. The exit nozzle also has an exit pressure and temperature that are the same as that in

> the throat region such that the exit nozzle is an extension thereof. That is, the exit nozzle has the same dimensions as the throat region. The exit nozzle is configured to introduce the mixed atomized fluids and the carrier fluid into the chemical vapor deposition chamber.

Appeal Brief, page 11, lines 19 through page 12, line 2. Gwyn discloses the exit nozzle 15 connected to the throat region 19 at a second end (the end where exit nozzle 15 and throat region 19 meet) The exit nozzle has the same diameter (at the upstream end of exit nozzle 15 where it connects with throat region 19; claim construction does not preclude the exit nozzle from having other diameters which are larger than the throat region), as the throat region (the diameters are the same since the throat region and the upstream end of exit nozzle 15 are smoothly contiguous). The exit nozzle has an exit pressure and temperature that are the same as that in the throat region (since at the point where the exit nozzle 15 connects with the throat region 19 share a common diameter size, the pressure and temperature must be the same). Note that appellant's claims describe the inlet nozzle, the throat region, and the exit nozzle having pressures and temperatures. It is not the physical device which possesses such temperature and pressure characteristics. For if no flow were present, the temperature and pressure within the device would be constant. It is the fluid flow itself which possesses such temperature and pressure characteristics. The last sentence, "The exit nozzle is configured to introduce the mixed atomized fluids and the carrier fluid into the chemical vapor deposition chamber," because of appellant's claim construction, merely recites that the exit nozzle be configured to introduce the mixed fluids into itself (the chemical

vapor deposition chamber is made up of the inlet nozzle, throat region, and the exit nozzle).

Claim 28

Appellant's argument is repetitive. Gwyn discloses cross-flow injector 20 connected to the throat region 19.

Claims 2, 12 and 14

Appellant argues that Gwyn is lacking in showing of prima facie obviousness from chemical vapor deposition chamber and dopants. As indicated above, Gwyn discloses such teachings, and appellant's claims, for such teachings, are rejected under 35 USC 102 as being anticipated by Gwyn. Appellant's claims 2, 12 and 14 are rejected under 35 USC 103 over Gwyn for the limitations "range of forty to sixty degrees," "range of twenty to forty degrees" and "range of forty to sixty degrees," respectively. Gwyn teaches, in column 2, lines 18-49, that throat region 19 is a venturi throat region which mixes colorants supplied through lines 20 with the air supplied through line 16. Gwyn teaches, in column 2, lines 22-30, using chamber 17 to store air at high pressure then using the converging section of chamber 17 to accelerate the air through throat region 19 to reduce the pressure to create the venturi flow. One of ordinary skill in the art would have recognized that the angle of convergence in the converging section of chamber 17 which in turn determines the diameter of throat region 19 ultimately determines the pressure and velocity of air in the throat region. Optimization of the angle of convergence of the converging section of chamber 17 to determine the optimal pressure and velocity in the throat region is within the knowledge

of one of ordinary skill in the art. Additionally, Gwyn teaches, in column 2, lines 40-45, that expansion and velocity change in duct 15 generates turbulent flow for effecting an additional mixing action. One of ordinary skill in the art would have recognized that the angle of divergence in the diverging section 15 determines the pressure and velocity change. Optimization of the angle of divergence of the diverging section 15 to determine the optimal pressure and velocity for additional mixing is within the knowledge of one of ordinary skill in the art. Finally, one of ordinary skill in the art would have recognized the principles and relationships of fluid velocity, volume (effective diameter of the fluid flow), pressure and temperature for those are well known laws governing properties of fluid flow of a converging diverging nozzle having a venturi feed at the throat.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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January 23, 2004

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